Appendix B

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
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March 9, 2004

Joseph P. Burke, District Superintendent
Springfield School Department
195 State Street, Box 1410
Springfield, MA 01102-1410

Dear Dr. Burke:

At the request of Mary Zamorski, Nursing Supervisor, Springfield School Department, the Bureau of Environmental Health Assessment (BEHA) conducted an evaluation of the indoor air quality at the Gerena Magnet School (GMS), 200 Birnie Avenue, Springfield, Massachusetts. As you may know, on February 13, 2004, I conducted this evaluation and was accompanied by Judy Deane of the American Lung Society of Western Massachusetts and Ms. Zamorski. Concerns about the conditions within the special needs student classroom prompted the request. The indoor air quality assessment included the main GMS building as well as occupied areas of the underground complex beneath the GMS. The special needs student classroom is located in a section of the underground complex referred to in this letter as the GMS Annex (the Annex).

During the course of the our assessment, a musty odor was detected in the special needs student classroom. Carpeting in this area near a hallway door was examined and found to the moistened with water (Picture 1). It appears that this section of carpet was previously replaced due to its different color from the rest of the wall-to-wall carpet in this area. A plastic walk off mat was observed on top of this carpeting. The plastic walk off mat is made of a water impermeable material, which prevents the carpet underneath it from drying. Carpeting is manufactured from porous materials that may serve as media for mold growth. Please note that the US Environmental Protection Agency and the American Conference of Governmental Industrial Hygienists (ACGIH) recommend that porous materials (such as carpeting) be dried with fans and heating within 24-48 hours of becoming wet (US EPA, 2001; ACGIH, 1989). If porous materials are not dried within this time frame, mold growth may occur. Water-damaged porous materials cannot be adequately cleaned to remove mold growth. The application of a mildewcide to moldy porous materials is not recommended. The plastic walk-off mat prevent drying, which has resulted in the carpeting remaining wet for extended periods of time and is likely colonized with mold.

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The most likely cause of carpet moistening is water penetration from the wall adjacent to the carpets edge. The special needs classroom is constructed in a section of the Annex that was built within a space created by a bridge that is part of the Interstate 91 highway (I-91). This classroom is located beneath an I-91 exit ramp (Picture 2). It appears that the wall prone to water penetration is in direct contact with soil beneath the I-91 off-ramp, which becomes saturated after rainstorms or snow plowing.

Building occupants confirmed that this section of the floor is prone to moistening. Any floor surface that is prone to standing water or moistening due to condensation generation should not be carpeted. In addition, the wall coving (Picture 3) at the wall-carpet junction consists of a water impermeable material. Water can accumulate behind the wall coving which can then chronically moisten the coving adhesive. The glue used to adhere the coving to the wall may serve as a mold growth medium. In this instance, carpeting that is chronically moistened should be removed. In addition, the wall coving in the area of moistened carpet should also be removed. Once the carpeting and coving is removed, this section of floor and wall should be observed to gauge the extent of water penetration through the wall. Excessive water should be mopped from the floor as needed. It is suggested that this section of floor be left bare to prevent further mold growth.

Finally, of note was a musty odor noticed upon entering the GMS media center mezzanine. This odor was found more pungent upon entering the pod area below the media center. In the ceiling beneath the media center was a ceiling tile that was colonized with mold (Pictures 4 and 5). BEHA staff tried to ascertain the source of water that had moistened this tile, but could not identify the water source. It is recommended that the ceiling tile be removed and the source of water causing the water damage be repaired.

In order to avoid potential mold and related spore movement during remediation, the following recommendations should be implemented in order to reduce contaminant migration into adjacent areas. These recommendations illustrate the potential of mold to impact indoor air quality.

1. Use local exhaust ventilation and isolation techniques to control remediation pollutants. The design of each system must be assessed to determine how it may be impacted by remediation activities. Specific HVAC protection requirements pertain to the return, central filtration and supply components of the ventilation system. This may entail shutting down systems during periods of cleaning, when possible; ensuring systems are isolated from contaminated environments; sealing ventilation openings and utilizing filters with a higher dust spot efficiency where needed (SMACNA, 1995).

2. The following precautions should be taken to avoid the re-entrainment of these materials into the HVAC system:

    a. Deactivate the HVAC system to be cleaned. Place an industrial sized fan in an open, exterior door to provide exhaust ventilation for areas to be cleaned. Be sure to place this exhaust fan in a manner to draw airborne particles away from clean areas of the building**.** This will draw air through HVAC system filters and prevent uncontrolled draw of outdoor pollutants into clean areas of the building.

b. Seal both the fresh air diffusers and return vents with polyethylene plastic in the areas to be cleaned. Vents for the restroom exhaust vent system should be sealed in a similar manner.

3. Clean surfaces that do not have visible mold colonies with a vacuum cleaner equipped with a high efficiency particle arrestance (HEPA) filter.

4. Discard porous materials that are contaminated with mold.

5. Disinfect non-porous materials (e.g., door frames, linoleum, cement, Lucite topped metal desks and chairs, wood surfaces) with an appropriate antimicrobial agent is recommended. Clean non-porous surfaces with soap and water after disinfection. As soon as this second cleaning is completed, use fans that introduce air from other clean areas or dehumidifiers to dry cleaned area.

6. Seal the doors of the classroom to be cleaned with polyethylene plastic and duct tape to prevent pollutant migration into uncontaminated areas of the building. Once cleaning is completed, remove plastic from vents in cleaned area and reactivate ventilation components (supply and exhaust).

7. Consult *Mold Remediation in Schools and Commercial Buildings* published by the US Environmental Protection Agency (US EPA) (US EPA, 2001) for further advice on mold remediation and measures to protect individuals conducting mold cleaning. Copies of this document can be downloaded from the US EPA website at: http://www.epa.gov/iaq/molds/mold_remediation.html.

We suggest that the majority of these steps be taken on any remediation/renovation project within a public building. Please feel free to contact us at (617) 624-5757 if you are in need of further information.

Sincerely,

Michael A. Feeney, R.Ph., J.D., C.H.O.
Emergency Response/Indoor Air Quality Program

cc/ Suzanne K. Condon, Assistant Commissioner, Center of Environmental Health
Martha Steele, Deputy Director., BEHA
Peter Levanos, Principal**,** Gerena Magnet School
Dr. Nancy Kloczko, Springfield School Department
Maryanne Morris, Special Needs Supervisor, Springfield School Department
Mary Zamorski, Nursing Supervisor, Springfield School Department
Judy Dean, Indoor Air Program Coordinator, American Lung Association

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References

ACGIH. 1989. Guidelines for the Assessment of Bioaerosols in the Indoor Environment. American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

SMACNA. 1995. IAQ Guidelines for Occupied Buildings Under Construction. 1st ed. Sheet Metal and Air Conditioning Contractors' National Association, Inc., Chantilly, VA.

US EPA. 2001. Mold Remediation in Schools and Commercial Buildings. US Environmental Protection Agency, Office of Air and Radiation, Indoor Environments Division, Washington, DC. EPA 402-K-01-001. March 2001.

Weather Underground, The. 2003. Weather History for Massachusetts, August 1, 2003 through August 13, 2003.
http://www.wunderground.com/history/airport

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Picture 1

Special Needs Classroom Moistened Carpet

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Picture 2

Exterior of the GMS Annex (Note Bridge and Trees Growing in Soil, Which Were above The Areas That Had Water Penetration)

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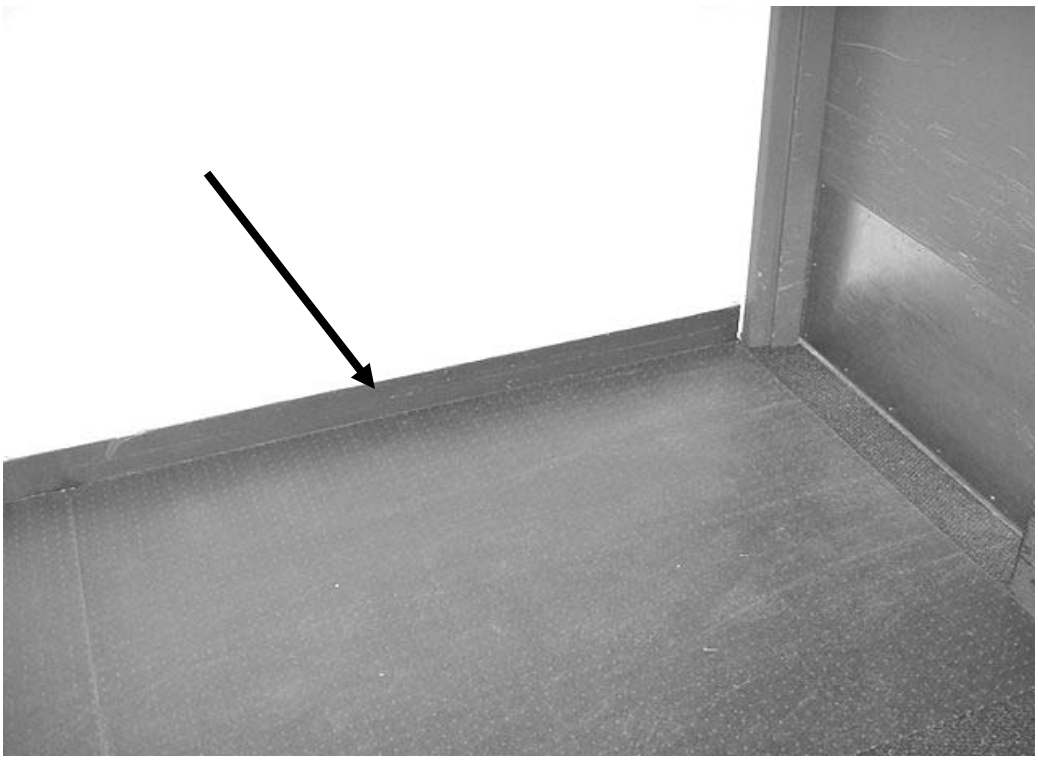
Picture 3



Wall Coving At Base of Wall Next To Moistened Carpet

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Picture 4

Mold Colonized Ceiling Tile above the Media Center Pod

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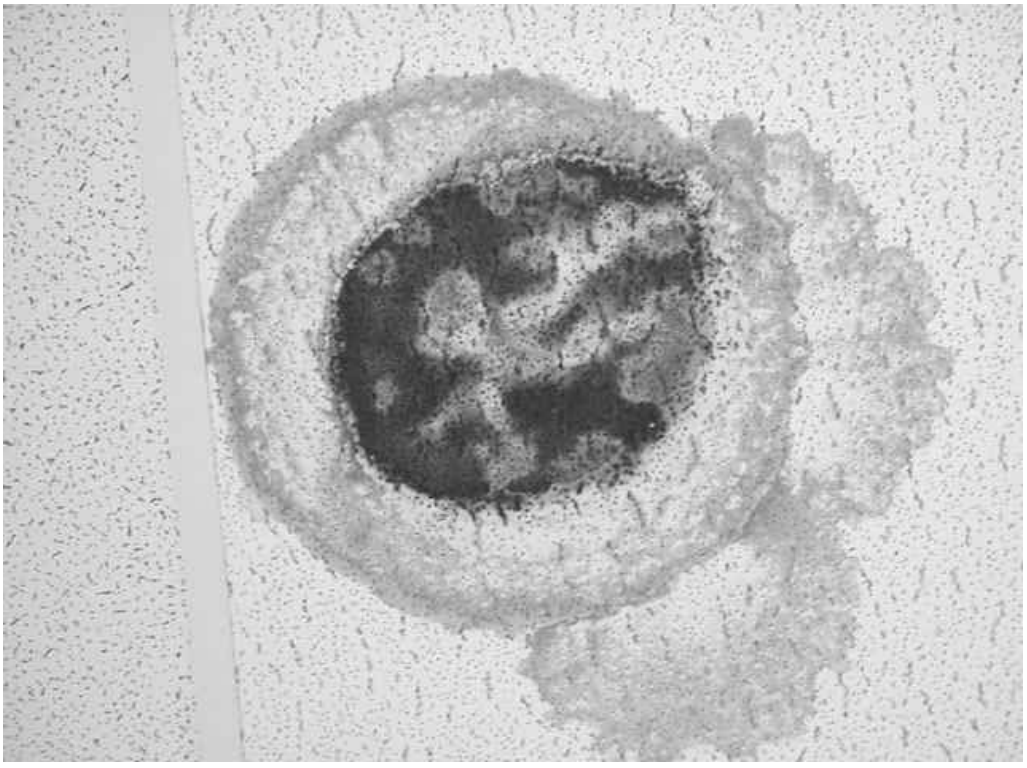
Picture 5



Close-Up of Picture 5